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ABSTRACT

The course is one of a group which provides 11th grade students with the general information, technical knowledge, basic skills, attitudes, and values required for job entry level in the printing industry. Course content includes goals, specific objectives, orientation, types of lithographic plates, surface plates for offset, wipe-on plates, machines and methods for other type plates, and plate exposure devices. Also studied are the processing of plates, plate troubles on the press, and care of plates after press use. A bibliography and posttest are appended. (NH)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

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Course Outline
PRINTING 2 - 9755
(Platemaking)
Department 48 - Quin 9755.04

DADE COUNTY PUBLIC SCHOOLS
DIVISION OF INSTRUCTION • 1973

CE 003 410

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D A D E C O U N T Y P U B L I C S C H O O L S

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Course Outline

PRINTING 2 - 9755
(Platemaking)

Department 48 - Quin 9755.04

county office of

VOCATIONAL AND ADULT EDUCATION

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Dade County Public Schools
Miami, Florida 33132

September, 1973

Published by the School Board of Dade County

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Course Description

9755	48	9755.04	Platemaking
State Category Number	County Dept. Number	County Course Number	Course Title

This quinmester is designed as one of a group of quinmester courses offered in the field of graphic arts. The student will receive the general information, technical knowledge, basic skills, attitudes and values that are required for the job entry level.

Indicators of Success: None

Clock Hours: 90

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PREFACE

The following quinmester course outline is a guide to help students become employable in the skills, knowledge, attitudes and values necessary for performing the required services of the platemaker.

The course, which is 90 hours in length is designed as one of the foundation courses for the 11th grade student. This outline consists of ten blocks of instruction, which are subdivided into several units each. This foundation quin is one of 14, at least 12 of which the student will select, enabling him to be gainfully employed in the printing industry and receive his trade competency certificate.

The teaching methods used by the instructor vary from time to time, depending upon the individual abilities of the students.

Several methods of instruction are used by the instructor in putting over both manipulative skills and trade technology. One method might be lecture, while another might be visual aids or actual instruction on the use of equipment, machines or a variety of materials.

A certain number of clock hours are designated for teaching each of the skills, but the schedule must be flexible.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee and the Vocational Curriculum Materials Service, and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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GOALS

The student must be able to demonstrate:

1. A knowledge of how the printing platemaker job fits into the production of a printing job.
2. A knowledge of the place and value of platemaking in the printing industry.
3. Importance in producing a quality plate to do a quality job.
4. Positive attitudes regarding the value and dignity of work.
5. Pride and respect of craftsmanship for this occupational field.
6. Safe work habits and proper behavior.
7. An incentive to continue training within the printing industry.

SPECIFIC BLOCK OBJECTIVES

BLOCK I - ORIENTATION

The student must be able to:

1. Identify course goals and objectives so that, given this information, he can express same to satisfaction of instructor.
2. Identify and demonstrate responsibilities during the courses so that, given the responsibilities in carrying out school policies, and work regulations, he can express and demonstrate same to satisfaction of instructor.
3. Identify benefits so that, given benefits in terms of opportunities and qualifications for employment and background necessary for continued training, he can express same to satisfaction of instructor.

BLOCK II - TYPES OF LITHOGRAPHIC PLATES

The student must be able to:

1. Demonstrate a knowledge of lithographic plates by listing the plates used in his class and writing an explanation of why those types of plates are used in his graphic arts class.
2. List four other plates that are not used in the graphic arts class but are used in industry and in writing explain their functions.
3. Demonstrate an understanding of the differences between the direct image plate, presensitized plate and photo direct plate, by receiving instructions from the instructor for three different printing jobs, and then choosing which plate will go with what printing job and, in writing, explain why.

BLOCK III - SURFACE PLATES FOR OFFSET

The student must be able to:

1. Demonstrate an understanding of how to image a paper master by using the hand and typewriter methods on a master given to him by the instructor and preparing it for a press run.
2. Exhibit an understanding of another method by preparing a paper master for a press run using the mechanical method.
3. Write a simple explanation of how a plate is made using the photo direct method.
4. Explain the reasons why a presensitized plate is sensitive.
5. Explain and list the reasons why the presensitized plate has become the most used plate in the printing industry.

BLOCK IV - WIPE ON PLATES

The student must be able to:

1. Explain the differences between the presensitized and wipe on plates.
2. Explain the procedure for coating a wipe on plate.
3. Research and list two manufactures of wipe on plates.

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BLOCK V - MACHINES AND METHODS FOR OTHER TYPE PLATES

The student must be able to:

1. Demonstrate an understanding of the xerography process by explaining it to the satisfaction of the instructor.
2. Explain why the deep etch plate is used for long press runs.
3. Write a paragraph explaining the theory of the metal dry offset plate.

BLOCK VI - PLATE EXPOSURE DEVICES

The student must be able to:

1. Write the name and specifications of the plate exposure machine in his graphic arts class.
2. Demonstrate an understanding of the plate exposure machine in his class by exposing a plate on it.
3. Explain why the vacuum printer is important to the exposure of the plate.
4. Demonstrate an understanding of the step and repeat machines by explaining what is meant by step and repeat.
5. Explain in simple terms the function of the photo direct platemaker.

BLOCK VII - PROCESSING PLATES

The student must be able to:

1. List all the chemicals needed to develop a presensitized plate.
2. Explain what is meant by the term desensitizing.
3. Demonstrate an understanding of the functions of gum arabic by using it in two different ways on a lithographic plate.
4. Demonstrate an understanding of the differences between the presensitized and deep-etch plate by listing the differences in processing and finished plate.
5. Explain the processing procedures in the Itek or 3-M or A.M. camera processors.
6. Explain the function of the processor and heat fuser in xerography.

BLOCK VIII - PLATE TROUBLES ON PRESS

The student must be able to:

1. Demonstrate an understanding of how to troubleshoot plate problems on a press by passing a test, listing the causes and writing in the probable remedies.
2. Exhibit his ability to solve plate problems on press by running a printing job on a printing press to the satisfaction of the instructor.

BLOCK IX - CARE OF PLATES AFTER PRESS USE

The student must be able to:

1. Devise and maintain a system for the storage and possible reuse of lithographic plates.

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BLOCK X - QUINMESTER POSTTEST

The student must be able to:

1. Satisfactorily complete the quinmester posttest.

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Course Outline

PRINTING 2 - 9755
(Platemaking)

Department 48 - Quin 9755.04

I. ORIENTATION

A. Objectives of the Course
   1. Introduction to the world of the graphic arts platemaker
   2. Employment opportunities
      a. Commercial printing shop
      b. Inplant printing shop
   3. Teaching methods:
      a. Lecturing
         (1) Teacher
         (2) Guest speaker from industry
      b. Discussions
         (1) Individual
         (2) Group
      c. Field trips
      d. Audiovisual aids
      e. Demonstrations
   4. Methods of evaluation
      a. Oral tests
      b. Written test
      c. Observation
      d. Manipulation

B. Student Benefits
   1. Opportunities for employment
      a. Scope of the trade
      b. Job opportunities
   2. Qualifications for employment
      a. Pride of workmanship
      b. Job competency
      c. Attitude
      d. Dependability
      e. Foundation for more education and training
      f. Experience

C. Student Responsibilities
   1. School policies and expenses
      a. Regular attendance
      b. Punctuality
   2. Safety regulations
   3. Shop rules and procedures
      a. Use and care of equipment
      b. Appropriate dress
      c. Materials and supplies
      d. Complete assignments

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II. TYPES OF LITHOGRAPHIC PLATES

A. Surface Plates
   1. Direct image
   2. Presensitized
      a. Contact-printed
         (1) Positive-working
         (2) Negative-working
      b. Photo direct (camera exposed)
   3. Whirler coated (albumin)
   4. Wipe-on
      a. Diazo
      b. Albumin
   5. Transfer
      a. Gelatin-silver emulsion
      b. Silver-diffusion
      c. Thermographic (infrared)
   6. Electronic scanning (facsimile)
   7. Electrostatic
      a. Contact
      b. Projection

B. Deep-etch

C. Relief Plates
   1. Metal dry offset plates
   2. Kodak relief plate
   3. Drycril photopolymer relief plate

III. SURFACE PLATES FOR OFFSET

A. Direct Image Masters
   1. Hand method
      a. Typewriter
      b. Hand drawn, written or lettered
   2. Mechanical method
      a. Letterpress
      b. Offset
   3. Photo direct
      a. Exposed through negatives
      b. Exposed from positives
   4. Other methods
      a. Electrostatic
      b. Transfer
      c. Facsimile

B. Presensitized Plates
   1. Coatings (light sensitive)
      a. Silver halides
      b. Bichromated coating
      c. Diazo materials
      d. Ferric (iron) compounds
      e. Photopolymers

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III. SURFACE PLATES FOR OFFSET (Contd.)

f. Photo-electrostatic coatings
g. Thermographic coatings

2. Varieties of presensitized plates
   a. Negative working plate
   b. Positive working plate
3. Types of presensitized plates
   a. Foil (3M-E or L)
   b. Regular (3M-R
   c. Simple processing (3M-K)
   d. Subtractive (3M-S
   e. Surface positive (3M-SP)

IV. WIPE ON PLATES

A. Coating

B. Exposure

C. Developing and Lacquering

D. On the Press

E. Storage

V. MACHINES AND METHODS FOR OTHER TYPE PLATES

A. Transfer Plates
   1. Kodak ektolith (gelatin-silver emulsion process)
   2. Agfa-Gaevert (silver-diffusion process)
   3. 3M Thermofax (thermographic process)

B. Electrostatic Plates
   1. Xerography process
   2. Thermographic transfer process

C. Deep-Etch Plates

D. Multimetal Plates

E. Metal Dry Offset Plate

F. Kodak Relief Plate

G. Drycril Photopolymer Relief Plate

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VI. PLATE EXPOSURE DEVICES

A. Exposure Frames and Printers
   1. Light sources:
      a. Light bulb (mercury vapor)
      b. Carbon arc
      c. Pulsed-xenon
   2. Printers
   3. Exposure control

B. Photo Direct Platemakers
   1. Xerox
   2. Itek
   3. A-M 705
   4. 3M

C. Step-and-Repeat Machines

VII. PROCESSING PLATES

A. Presensitized Plates
   1. Desensitizing:
      a. One step
      b. Process gum
   2. Developing:
      a. One step
      b. Developer (lacquer)
   3. Washing:
      a. Water
      b. Process gum
   4. Preserving plate:
      a. Process gum
      b. Gum arabic

B. Deep-Etch Plates
   1. Pre-etching solution
   2. Positive coating solution
   3. Positive developer
   4. Positive etching solution
   5. Alcohol cleaner
   6. Positive lacquer
   7. Deep-etch developing ink
   8. Stop-out solution
   9. Developing pad
   10. Etching pad

C. Xerography
   1. Camera
   2. Processor
   3. Heat fuser

D. Photo Direct
   1. Itek platemaster
   2. AM 705 camera processor
   3. 3M camera processor

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VIII. PLATE TROUBLES ON THE PRESS

A. Plate Refuses To Roll Up Properly
   1. Causes
      a. Gum has dried over part of plate
      b. Developing ink has dried on the image areas
   2. Remedies
      a. Wet wash the plate and resensitize
      b. Run paper through press with ink rollers off until all ink is removed from plate, then drop ink form rollers on plate

B. Non-Image Areas Become Greasy or Scummy
   1. Causes
      a. Dirty or worn dampener covers
      b. Running too much ink on halftones
      c. Slurring of halftones
      d. Improper functioning of dampening or inking rollers or both
      e. Ink is too soft or greasy
      f. Abrasive particles in the ink
      g. Abrasive picked up from the paper surface by the offset blanket
   2. Remedies
      a. Clean or recover the dampening rollers
      b. Wet-work, roll up and re-etch the plate - Run the ink as stiff and spar as possible
      c. Reduce ink feed and reduce plate to blanket - Back cylinder pressures to a minimum
      d. Reset the form rollers to proper pressures against the plate and drum
         (1) Eliminate end play in form rollers
         (2) Check blanket tension and tighten if necessary
         (3) Check glaze on form rollers and recondition them if necessary
      e. Stiffen ink with #8 varnish, body gum or any other ink stiffener
      f. Have ink reground or replace it with a better ink
      g. Reduce the plate-to-blanket and back cylinder pressures to a minimum, if possible, change to another paper.

C. Plate Fails to Print Full-Strength Color
   1. Causes
      a. Image lacks ink affinity
      b. Ink is water-logged and is piling on the rollers, plate and blanket
   2. Remedies
      a. For presensitized plates, follow the supplier's instruction for resensitizing the image areas
      b. Cut down water fountain to a minimum

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IX. CARE OF PLATES AFTER PRESS USE

A. Inspection of Plates for Reuse
   1. Image area
   2. Plate background

B. Storage of Plates
   1. Preserving plate
   2. System of storage

X. QUINMESTER POST-TEST

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A P P E N D I X

Quinmester Posttest Sample

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QUINMESTER POSTTEST I-

Name _____ Date _____ Score ____

Multiple Choice Test Items

Each statement needs a word, a figure, or a phrase to make it correct. Only one of the choices listed is correct. Place the number of the choice you make in the space provided at the right edge of the sheet.

1. Plates are grained to (1) hold the image, (2) clamp to press, (3) carry ink, (4) I don't know. ( )

2. A plate with an .00 grain is (1) coarse, (2) medium, (3) fine, (4) I don't know. ( )

3. Deep-etch plates are made for (1) small presses, (2) fine work, (3) longer press life, (4) I don't know. ( )

4. To make it more receptive to ink, a plate is (1) grained, (2) counter-etched, (3) desensitized, (4) I don't know. ( )

5. Developing ink used on plates is (1) quick drying, (2) water, (3) blue, (4) I don't know. ( )

6. When a plate is stored, it is coated with (1) gum, (2) asphaltum, (3) caustic, (4) I don't know. ( )

7. Developing ink is applied to the plate with (1) cotton, (2) felt, (3) sponge, (4) I don't know. ( )

8. After the plate is desensitized, and washed, apply a thin coat of (1) etch, (2) gum, (3) ink, (4) I don't know. ( )

9. Register marks are removed with (1) snake slip, (2) toushe, (3) cotton, (4) I don't know. ( )

10. Presensitized plates eliminate the process of (1) developing, (2) desensitizing, (3) gumming, (4) counteretching, (5) I don't know. ( )

11. The Itek Platemaster takes a minute to make (1) one plate, (2) two plates, (3) negatives, (4) positives, (5) I don't know. ( )

12. Maximum enlargement on the Itek is (1) 25%, (2) 50%, (3) 100%, (4) 110%, (5) I don't know. ( )

13. Sensitized plates should be processed in (1) bright light, (2) subdued light, (3) darkroom, (4) I don't know. ( )

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14. When storing plates, they should be (1) stocked, (2) presensitized ed, (3) hung, (4) I don't know. ( )

15. The platemaking job starts with the (1) flat, (2) copy, (3) negative, (4) I don't know. ( )

16. The cameraman should understand platemaking because he (1) shoots the plate, (2) links his work with the platemaker, (3) deals with exposures, (4) I don't know. ( )

17. Dry-offset plates are printed without (1) water, (2) ink, (3) paper, (4) I don't know. ( )

18. No negatives or positives are used in making plates by (1) dry offset, (2) multi-metal, (3) presensitized, (4) xerography, (5) I don't know. ( )

19. Deep-etch plates are exposed to (1) red lights, (2) positives, (3) negatives, (4) I don't know. ( )

20. To check the proper exposure in platemaking, use a (1) thermometer, (2) gray scale, (3) hygrometer, (4) I don't know. ( )

21. Oxidation means (1) gumming, (2) change, (3) desensitize, (4) I don't know. ( )

22. A soft metal plate is (1) zink, (2) monel, (3) chromium, (4) I don't know. ( )

23. The whirler is used to (1) expose plates, (2) develop plates, (3) coat plates, (4) I don't know. ( )

24. Presensitized plates are usually made on (1) zink, (2) stainless steel, (3) aluminum, (4) I don't know. ( )

25. The Itek makes (1) negatives, (2) copies, (3) plates, (4) I don't know. ( )

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QUINMESTER POSTTEST II

Name _____ Date _____ Score _____

True-False Test Items

Each of the following statements is either true or false. If the statement is true, draw a circle around the letter T following it; if the statement is false, draw a circle around the F. If a statement is false in part, it is entirely false.

---

1. The normal presensitized plate is surface coated. T F
2. Surface coated plates are made from negatives. T F
3. In some shops, the cameraman may be the platemaker. T F
4. The vacuum frame is used to coat plates. T F
5. The photo-composing machine is used in place of the whirler. T F
6. The Itek-Platemaker will replace the process camera. T F
7. The chemicals in the Itek-Platemakers must be changed every month. T F
8. The albumin plate is replacing the presensitized plate. T F
9. Direct image plates have no sensitized coating on their surface when purchased. T F
10. You may type directly on a direct image plate. T F
11. You don't have to worry how you handle a direct image plate. T F
12. Direct image plates are also called masters. T F
13. Direct image plates are used in office printing. T F
14. Presensitized plates are light sensitive. T F
15. The first step in developing a presensitized plate is to put on developer. T F
16. The photo direct platemaker does not need a copyboard. T F
17. Itek, A-M 705, 3M camera-processor are all photo direct platemakers. T F
18. Straight edge, slotted, punched and serrated are types of paper. T F

19. Electricity plays a part in making a plate in xerography. T F

20. Any plate can go on any press. T F

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ANSWER KEY TO QUINMESTER POSTTESTS

Multiple Choice

1. (1)
2. (3)
3. (3)
4. (2)
5. (1)
6. (2)
7. (1)
8. (2)
9. (1)
10. (4)
11. (1)
12. (4)
13. (2)
14. (3)
15. (1)
16. (3)
17. (1)
18. (4)
19. (2)
20. (2)
21. (2)
22. (1)
23. (3)
24. (3)
25. (3)

True-False

1. True
2. True
3. True
4. False
5. False
6. False
7. False
8. False
9. True
10. True
11. False
12. True
13. True
14. True
15. False
16. False
17. True
18. False
19. True
20. False